

DMS - 8141

PAINT, SILICONE RESIN FOR CONCRETE

EFFECTIVE DATE: OCTOBER 2014

8141.1. Description. This Specification governs the materials, composition, quality, sampling, testing, and pre-qualification of a silicone resin emulsion paint (SREP) for concrete.

8141.2. Units of Measurements. The values given in parentheses (if provided) are not standard and may not be exact mathematical conversions. Use each system of units separately. Combining values from the two systems may result in nonconformance with the standard.

8141.3. Material Producer List. The Materials and Pavements Section of the Construction Division (CST/M&P) maintains the Material Producer List (MPL) of all materials conforming to the requirements of this Specification. Materials appearing on the MPL, entitled "[Paint, Silicone Resin](#)," have passed evaluation for conformance with this Specification. These materials require sampling and testing for product verification before use.

8141.4. Bidders' and Vendors' Requirements. The Department will only purchase or allow on projects those products listed by manufacturer and product code or designation shown on the MPL.

8141.5. Pre-Qualification Procedure.

A. Pre-Qualification Request. Submit a request for evaluation to the Texas Department of Transportation, Construction Division, Materials and Pavements Section (CP-51), 9500 North Lake Creek Parkway, Austin, TX 78717.

Include the following with the request:

- safety data sheet (SDS) that complies with OSHA's Hazard Communication Standard 29 CFR 1910.1200;
- product data sheet;
- application data sheet;
- test report showing that the material meets the requirements specified in Article 8141.6, and
- a 1 L (1 qt.) sample of each material component.

B. Evaluation. The Department will evaluate one formulation at no cost to the supplier. The supplier will bear the cost associated with additional testing necessary to establish specification compliance. The Director of CST/M&P will assess this cost at the time of evaluation, and amounts due will be billed to the producer.

1. Qualification. The Department will list materials meeting the requirements of this Specification on the MPL.

- 2. Failure.** Suppliers not qualified under this Specification may not furnish materials for Department projects.

Suppliers failing to qualify may submit a request for re-evaluation after 6 months have elapsed from the date of the original request. CST/M&P may modify this time limit at its discretion. In the request for re-evaluation, the supplier must document the cause of the issue and corrective action taken.

The Department normally bears the costs of sampling and testing; however, the supplier will bear the costs associated with materials failing to conform to the requirements of this Specification. The Director of CST/M&P will assess this cost at the time of re-evaluation, and amounts due will be billed to the producer.

- C. Formulation Changes.** Report any changes in formulation to CST/M&P. The Department will evaluate one reformulation per year at no cost to the supplier. The Department reserves the right to conduct any tests deemed necessary to identify a qualified material and to determine if there has been a change in formulation. Detected changes not reported to the Department may be grounds for removal from the MPL.

Except for transition periods not to exceed 3 mo., a supplier may not supply more than one pre-approved formula per type of coating at the same time.

- D. Periodic Evaluation.** The Department reserves the right to perform random audits of test reports and to conduct random sampling and testing to evaluate the performance of materials. Tex-736-I describes the sampling procedure. In case of variance, the Department's tests will govern. CST/M&P will select random samples from materials submitted to the Department on Contracts or direct State purchase orders. Failure to comply with the requirements of this Specification may be cause for removal from the MPL.

- E. Disqualification.** Causes for disqualification may include, but are not limited to:

- falsification of documentation,
- failure to report formulation changes,
- failure to meet the requirements of this Specification as a result of periodic evaluation,
- supplier has unpaid charges for failing samples, or
- supplier has not supplied material to Department projects or contracts for 2 years.

CST/M&P will remove disqualified producers from the MPL and will not allow submission of material for re-qualification for 6 mo., at the discretion of the Department.

- F. Re-Qualification.** Once the disqualification period established by CST/M&P has elapsed, suppliers disqualified and removed from the MPL may begin the re-qualification process by submitting a request in accordance with Section 8141.5.A, including additional documentation identifying the cause of the problem and corrective action taken. The re-qualification process will then follow all subsequent Sections of Article 8141.5.

The Department normally bears the costs of sampling, testing, and inspection; however, the disqualified supplier will bear the costs associated with re-qualification. The Director

of CST/M&P will assess this cost at the time of re-evaluation, and amounts due will be billed to the producer.

8141.6. Material Requirements.

- A. General Requirements.** Coatings must bond well and not react deleteriously with above grade concrete, concrete block, exposed aggregate concrete, brick, stonework, or other cementitious substrates.

The coating resin must be non-chalking and consist of more than 50% organopolysiloxanes.

All pigments and colorants must be inorganic, stable, and lightfast.

1. **Dry Times.** The dry times of a 5-mil wet film of the coating must meet set-to-touch, 2 hr. maximum and dry through, 24 hr. maximum when tested at 77°F in accordance with ASTM D 1640.
2. **Consistency.** The applied coating must produce a firm, continuous, uniform film that is free of pinholes, cracks, or other film defects and exhibit satisfactory adhesion. The consistency must be such that the coating can be satisfactorily applied by spray, roller, or brush at atmospheric and material temperatures above 50°F without thinning.

Coating must have no skins, agglomerates, or other undesirable particles when determined in accordance with Tex-805-B.

The coating must not sag, disintegrate, check, peel, crack, or otherwise not form a uniform coating during the required curing period when applied properly to vertical surfaces. The cured coating must have a minimum sag resistance of 5 mils.

The consistency of the coating must match that of the evaluation sample when measured with a Krebs-modified-Stormer Viscometer (± 5 KUs) at 77°F in accordance with ASTM D 562.

3. **Density.** The density of each component must not vary by more than ± 0.1 lb. per gal. from the density of the evaluation sample when tested at 77°F in accordance with ASTM D 1475.
4. **Color.** The color must match Federal Standard 595C, color number 35630, unless otherwise shown on the plans. When the plans show another color, it must match the color standard supplied or selected by the Engineer.
5. **Primers.** Primers, when recommended by the manufacturer, must be the same formulation and type as those pre-approved by CST/M&P.
6. **Infrared Spectrum.** The infrared spectrum taken in accordance with Tex-888-B must match that of the pre-qualification sample.
7. **Percent Solids.** The percent solids must be within 2.0 percentage points of the pre-qualification sample when tested in accordance with ASTM D 2369.
8. **Accelerated Weathering.** Following application to a mortar block at 5 mils wet film thickness (WFT), the coating will be exposed to 1,000 hr. of accelerated weathering in

accordance with ASTM G 155, Cycle 1 using a quartz inner filter and borosilicate outer filter.

Following exposure, the coating must have no cracking, checking, blistering or other failure modes and must meet the following requirements:

- Color change—Delta E less than 3.0,
- 60 degree gloss change—less than 5.0, and
- Chalking per ASTM D 4214, Method A—10.

9. Moisture Resistance. When tested in accordance with ASTM D 6904, average weight gain of three blocks must be 0.20 lb. or less.

10. Adhesion. When tested in accordance with ASTM D 4541 utilizing a Type II tester, the average adhesion of three tests must be a minimum of 400 psi.

11. Water Vapor Transmission. When tested in accordance with ASTM E 96, Method B, average water vapor transmission must be a minimum of 50 Perms.

12. Flexibility. When tested in accordance with ASTM D 522, Method A, applied at a WFT of 5 mils and fully cured, there must be no cracking, peeling, debonding, or other failure modes at or greater than 0.25-in. diameter mandrel.

8141.7. Containers and Markings.

A. Packaging. Ship materials in suitable strong, well-sealed containers that meet federal requirements and that are sufficiently sturdy to withstand normal shipping and handling.

B. Labeling. Label the sides of the containers and cases with a durable label (sufficiently moisture resistant to withstand outdoor storage for a minimum of 1 yr.) legibly printed with the following:

- manufacturer's name;
- product designation, including component part (if applicable);
- batch number;
- date of manufacture; and
- net volume or weight.

If palletized or if other group packaging is used, maintain a label that is easily readable on the outside packaging.